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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/575,607	05/22/2000	Darragh Edgmain Ballesty	PHB-34.344	1470

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BRIARCLIFF MANOR, NY 10510

EXAMINER

TRAN, CON P

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/575,607

Applicant(s)

BALLESTY ET AL.

Examiner

Con P. Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 May 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 1-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed on October 20, 2000 does not include Form PTO-1449. Accordingly, fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Priority***

2. Acknowledgment is made of applicants' claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. GREAT BRITAIN 9911737.6, filed on May 21, 1999.

### ***Drawings***

3. Figures 2, 3, and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

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applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

***Claim Objections***

5. Claims 1-10 are objected to because of the following informalities:

There are no transitional phrases in Claims 1-9. For purpose of examining, Examiner assumes that Claims 1-9 are open-ended claims.

Claim 10 is an apparatus claim; however, Claim 10 refers to method claim of Claim 1. For purpose of examining, Examiner assumes that Claim 10 is a means-plus-function claim.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 6, and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lawlor and Fagan, "Time-Scale Modification of Speech by Zero-Crossing Rate Overlap-Add (ZCR-OLA)", Acoustics, Speech, and Signal Processing, IEEE Int. Conf., (cited by Applicant, hereinafter, "Lawlor") in view of Voran U.S. Patent 6,092,040.

Regarding **claim 1**, Lawlor teaches a method of time-scale modification processing of frame-based digital audio signals wherein, for each frame of predetermined duration (ZCR-OLA algorithm has much in common with the SOLA algorithm; page 402, lines 46-52; page 403, lines 25-57):

the original frame of digital audio is copied; the original and copied frames are partly overlapped to give a desired new duration to within a predetermined tolerance (Lawlor discloses that Rouscos teaches in SOLA to duplicate and overlap-add the original speech segment; obtain local "best match" by varying TSM factor, i.e., predetermine tolerance; page 402, line 46 – page 403, line 4; page 404, lines 10-11; Fig. 1);

the extent of overlap is adjusted within the predetermined tolerance by reference to a cross-correlation determination of the best match between the overlapping portions of the original and copied frame (Lawlor discloses that Rouscos teaches in SOLA using cross-correlation to obtain local "best match" by varying TSM factor, i.e., predetermine tolerance; page 402, line 46 – page 403, line 4; page 404, lines 10-13; Fig. 1); and

a new audio frame is generated from the non-overlapping portions of the original and copied frame (page 404, line 10-17; step 4) and by cross-fading between the overlapping portions (page 406, lines 1-26);

characterised in that a profiling procedure is applied to the overlapping portions of the original and copied frame prior to cross correlation (Lawlor using ZCR

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profile of a windowed segment and aligning, i.e., matching, two largest peak using cross correlation; page 403 line 11 – page 404, line 17; page 406, lines 1-26; Fig. 1).

However, Lawlor does not explicitly disclose the profiling procedure reduces the specification of the respective audio frame portions to respective finite arrays of values, and the cross correlation is then performed in relation only to the pair of finite arrays of values.

Voran teaches an algorithm in which a cross-correlation value is calculated between the complex number stored in arrays (ref\_temp, test\_temp, i.e., finite arrays of values; step 130, Fig. 1; col. 7, lines 34-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the algorithm of Voran teaching with the process of Lawlor for purpose of providing perceptually consistent comparison of speech signals, as suggested by Voran in column 1, lines 21-22.

Regarding **claim 6**, Lawlor further teaches wherein the predetermined tolerance within which the overlap between the original and copied frames may be adjusted is based on the pitch period of the audio signal for the original frame (obtain local “best match” by varying TSM factor, i.e., predetermine tolerance; page 402, line 46 – page 403, line 4; page 404, lines 10-11; page 403, line 54 – page 404, line 25, Fig. 1).

Regarding **claim 10**, this claim merely specifies hardware of program necessary for performing to method claim of claim 1 and is therefore interpreted and rejected for the same reasons.

8. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawlor and Fagan, "Time-Scale Modification of Speech by Zero-Crossing Rate Overla-Add (ZCR-OLA)", Acoustics, Speech, and Signal Processing, IEEE Int. Conf., (cited by Applicant, hereinafter, "Lawlor") in view of Voran U.S. Patent 6,092,040, and further in view of Hoek U.S. Patent 6,266,003.

Regarding **claim 2**, Lawlor in view of Voran method as claimed in Claim 1. Lawlor in view of Voran teaches wherein for the overlapping portions the profiling procedure identifies periodic or aperiodic values of the audio signal portions and places these values in the respective arrays. However, Lawlor in view of Voran does not explicitly disclose these values are periodic or aperiodic maxima and minima.

Hoek teaches a method of modifying time scale in an audio signal (col. 3, lines 1-3) in which each maxima and associated local minima is used to define regions 321, 322 (col. 5, lines 1-3; FIG. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of identify local maxima and local minima of Voran teaching with the process of Lawlor in view of Voran in order to identify a



periodic or aperiodic maxima and minima value for purpose of manipulating an audio signal, as suggested by Hoek in column 3, line 31.

9. **Claims 3-5, 7-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lawlor and Fagan, "Time-Scale Modification of Speech by Zero-Crossing Rate Overlap-Add (ZCR-OLA)", Acoustics, Speech, and Signal Processing, IEEE Int. Conf., (cited by Applicant, hereinafter, "Lawlor") in view of Voran U.S. Patent 6,092,040, in view of Hoek U.S. Patent 6,266,003, and further in view of Pawate et al. U.S. Patent 5,641,927 (hereinafter, "Pawate").

Regarding **claim 3**, Lawlor in view of Voran and in view of Hoek teaches method as claimed in Claim 2. Lawlor in view of Voran and in view of Hoek discloses wherein the overlapping portions are each specified in the form of array (matrix), and the cross correlation is applied to the pair of matrices.

However, Lawlor in view of Voran and in view of Hoek does not explicitly disclose wherein a matrix having a respective column for each audio sampling period within the overlapping portion and a respective row for each discrete signal level specified.

Pawate teaches a method using Direct Resampling followed by Time Scale Modification approach to shifting the key of the background music (col. 7, lines 26-29) in which a matrix having columns of the matrix represent the individual detectors and the rows are estimates of period (col. 7, lines 59-63).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method using matrix of Pawate teaching with the process of Lawlor, Voran, Hoek in combination for purpose of providing smoother transitions between successive frames resulted in much higher quality, as suggested by Pawate in column 7, lines 20-21.

It should be noted that one of ordinary skill in the art would have been able to choose columns of the matrix for sampling period and rows for signal level or vice versa.

Regarding **claim 4**, Lawlor further teaches wherein a median level is specified for the audio signal level, and the maxima and minima are specified as positive or negative values with respect to the median value, e.g., dc value, see Figs. 1 (a) and 1(b).

Regarding **claim 5**, Hoek further teaches wherein prior to cross correlation, at least one of the matrices is converted to a one-dimensional vector populated with zeros except at maxima or minima locations for which it is populated with the respective maxima or minima magnitude (at local maxima or local minima, only each maxima and associated minima is identified, col. 5, lines 1-8) .

Regarding **claim 7**, Lawlor further teaches wherein the maxima or minima are identified as the greatest recorded magnitude of the signal, positive or negative,

between a pair of crossing points of the median value, e.g., dc value, see Figs. 1 (a) and 1(b).

Regarding **claim 8**, Lawlor further teaches, wherein a zero crossing point for the median value is determined to have occurred when there is a change in sign between adjacent digital sample values (page 403, lines 25-56; Fig. 1).

Regarding **claim 9**, Lawlor further teaches, wherein a zero crossing point for the median value is determined to have occurred when a signal sample value exactly matches the median value (when signal sample value is zero, it is a zero crossing point page 403, lines 25-56; Fig. 1).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Con P. Tran, whose telephone number is (703) 305-2341. The examiner can normally be reached on M - F (8:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Customer Service Office at telephone number (703) 306-0377.

cpt *CPJ*  
September 7, 2004

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**XU MEI**  
**PRIMARY EXAMINER**